

Pragmatism and Radical Empiricism in Philosophy and Education

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Abstract

This paper examines the relationships between the scientific and mathematical logic of C. S. Peirce and the psychological, theosophical, and empirical philosophy of William James. It focuses first on the early development, and the principles of Pragmatism in the work of Peirce and James the place of Louis Agassiz in their development, then on the continued relevance of pragmatic thought in the philosophy of education. Tracing the development of Peirce's and James's philosophies allows the formation of an understanding of the origins of Pragmatism and the opportunities for its idiosyncratic development is examined. The paper culminates in an examination of the impact of these early thinkers of education and their different roles impacting education in society and the continuing of pragmatic thought in education.

Keywords: Philosophy of Science; Philosophy of Education; Pragmatism; Radical Empiricism; Psychology; Logic; Abduction; Darwinism; Louis Agassiz; Charles Peirce; William James

“The Final Word in Philosophy”

When William James (1842-1910) presented the idea of pragmatism to the Philosophical Union at the University of California at Berkeley in the Fall of 1898, he was expressing what had already been around for over twenty years. Charles S. Peirce (1839-1914) had provided, in James' (1898) words, the “final word in philosophy. It would bring theory down to a single point, at which every human being's practical life would begin” (p. 287). The continued interest in philosophy and especially the philosophy of education calls into question the problematic relationships of the idealist, realist, empiricist, and scientific views that lead to an unending discussion of historical and traditional problems. In this investigation, I focus on the rise of pragmatic thinking in the writing of Charles Sanders Peirce and William James. Beginning with Peirce, I provide an overview of his expansive philosophic, scientific, and mathematical interests with a focus on his pragmatic thinking and writing. Turning to James, I look at his

influence on the development of pragmatic thought and the contrasts between James's Radical Empiricism and what Peirce came to call Pragmaticism to distinguish it from other pragmatic conceptions. In conclusion I ask readers to consider the importance of the mode of thinking described by Peirce's experience-based epistemology and logic, the importance of the abductive logic which it requires and the impact of the philosophical and psychological basis for teaching and learning described by James. I also examine the influence of Louis Agassiz (1807-1873), who played no small part in the indoctrination of Peirce and James into the ways of science.

Charles S. Peirce

With his father's guidance, Peirce studied mathematics, science, and philosophy from an early age. He later commented, "When I was beginning my philosophical reading, my father, Benjamin Peirce (1807-1873), forced me to recognize the extremely loose reasoning common to the philosophers" (Pierce, 1958, p. 2.9) Charles Peirce graduated from Harvard in 1859. His father arranged a field trip for him to survey Louisiana where he learned of the publication of *On the Origin of Species* (Peirce, 1958, p. 5.64). Back in Cambridge, he studied with the naturalist Louis Agassiz in summer of 1860, (Fisch, 1986, p. 37) gaining an understanding of the importance of careful observation and classification. Although the influence of Charles Darwin (1809-1882) and evolutionism dominated the decades after 1859 there was plenty of discussion about the mechanism of evolution. The selective breeding of plants and animals has a long practical history, but it was not until Gregor Mendel's (1822-1884) experiments that an idea of the workings of genetics was hypothesized, a hypothesis that would have worked well with Peirce's interests in probability and chance. Mendel's (1901) description of his experiments with peas presented as a lecture and published in 1865 in the journal, *Abhandlungen des naturforschenden Vereines in Brünn* (vol. 4). He published a second essay on the genetics of hawkweed in 1869 (vol. 8) His work lay dormant for nearly fifty years until William Bateson (1861-1926) who in 1900 had agreed to give a lecture on the problems of heredity, read Mendel's "*Versuche über Pflanzen-Hybriden*," on the train, and changed the Lecture to "The Problems of Heredity" introducing Mendelian genetics (Henig, 2001). Bateson (1902), a long time student of variation in living organisms, became a leading Mendelian evolutionist. He wrote, "Had Mendel's work come into the hands of Darwin, it is not too much to say that the history of the development of evolutionary philosophy would have been very different from that which we have witnessed" (p. 39). In an 1884 Metaphysical Club lecture, Peirce noted that the impact of the "idea of evolution" was increasingly governing science (1992, p.

219). Peirce returned to Harvard during the summer of 1860 to enter graduate school. During the summer and fall of 1860 he worked with Louis Agassiz applying the scientific method to zoological classification and taxonomy (Fisch, 1986 p. 381). Though Peirce did not accept Agassiz's creationist preconceptions, the influence of Agassiz on Peirce is not negligible. Agassiz's influence is visible in Peirce's use of classification in his theory of signs, the sciences, and his logic in general.

Agassiz, a recognized geologist and zoologist in Europe, came to the United States in 1846 to deliver the Lowell lectures at Harvard titled "The Plan of Creation in the Animal Kingdom" at Harvard (Lurie, 1960, p. 26). A charming and likeable man, he soon became very popular in Cambridge social circles, so much so that he had to take a secret room to escape the demands on his time that prevented him from his work. Agassiz, ever the self-promoter, soon developed the relationships that resulted in being named professor of Geology and Zoology of the Lawrence Scientific School in the Fall of 1847. He believed that natural science had to be learned from discovery and experience (Lurie, 1960). Agassiz promoted the creation of a Museum of Comparative Zoology which became a reality in January of 1859 with himself as director. As a geologist and zoologist, Agassiz excelled but his expressed creationist, racial, and religious ideas were used as an explanation and justification for slavery and institutional racism forever marred his reputation. Agassiz's interest in human differences continued through the Thayer expedition with his study of the indigenous population. Although Agassiz was an anti-evolutionist whose contrary opinions drove most of his students and readers into the evolutionist camp (Fisch, 1986), Peirce saw in evolution the logic of the adaptation to environment (Peirce, 1958).

Peirce obtained a degree in Chemistry in 1863 from Harvard's Lawrence Scientific School, continued graduate studies in science and philosophy. He delivered the Harvard Lectures on "The Philosophy of Science" in the Spring of 1865 at Harvard where he introduced his theory of signs and semeiotics, defining logic as the science of the conditions which enable symbols in general to refer to objects" (Peirce, 1865, p. 11). In the Fall of 1866 he delivered the Lowell Lectures on "The Logic of Science; or Induction and Hypothesis" (Brent, 1998, p. 69). In Cambridge, Peirce, William James, and others formed the first Metaphysical Club in 1871 for the discussion of current topics in philosophy. Peirce (1958) chose the name "half-ironically, half-defiantly, ... for agnosticism was then riding its high horse, and was frowning superbly upon all metaphysics" (p. 5.11). For the Harvard Metaphysical Club, he wrote "a little paper expressing some of the opinions that I had been urging all along under the name of pragmatism" (p. 5.11). It was published in volumes 12 and 13 of *Popular Science Monthly*

with five additional essays (Peirce, 1992, p. v). When Peirce began teaching Logic at Johns Hopkins in 1879, he reorganized a Metaphysical Club which met monthly to hear papers from students and professors, many of which were published. *Studies in Logic*, containing essays of his students and his essay, "A Theory of Probable Inference" where he maintained that "all knowledge is based on experience, ... science is only advanced by the experimental verifications of theories, ... [and] that all human knowledge, up to the highest flights of science, is but the development of our inborn animal instincts" (1883, p. 181) In an 1884 Metaphysical Club lecture, Peirce (1992) noted that the impact of the "idea of evolution" was increasingly governing science as "the postulate of logic" (p. 219). The Johns Hopkins Metaphysical Club, one of five scholarly organizations supported by the University, met monthly until Peirce was removed from the faculty. Peirce, G. Stanley Hall (1844-1944), and George Sylvester Morris (1840-1889) served as President and faculty sponsors. The final meeting of the Metaphysical Club was in March 1885. When Morris departed for a full-time appointment at Michigan, G. Stanley Hall oversaw its replacement with a weekly psychology seminary as a part of the new department of psychology (Behrens, 2005).

Peirce's contributions to the sciences and philosophy include pragmatism which relates meaning to consequences; objective idealism or ideal-realism which he attributed to his father as "the opinion that nature and the mind have such a community as to impart to our guesses a tendency toward the truth, while at the same time they require the confirmation of empirical science" (Houser, 1992, p. xxv); fallibilism, the necessity of considering knowledge tentative, under continuous reconstruction; semiotics, the relationship of signs, symbols, signification, with the growth of knowledge; tychism, the importance of chance; synechism, the existence of continuity; agapism, the necessity of empathy, sympathy, and love; as parts of Peirce's evolutionary cosmology (p. xxii.). Peirce hypothesized that three elements are active in the world: first, chance; second, law; and third, habit-taking. He wrote [that] "in evolutionary cosmology, in which all the regularities of nature and of mind are regarded as products of growth" (Peirce, 1992, p. 312) Peirce became known as a logician. He posited that the "chief business of the logician is to classify arguments; for all testing clearly depends on classification" (Peirce, 1958, p. 2.619). This relates to the work done with Agassiz whose work he appreciated for the process but found inadequate in the inductive or synthetic reasoning.

Peirce noted that his first use of the term pragmatism was at the Metaphysical Club in Cambridge which he later composed into a set of articles on the logic of science published in *Popular Science Monthly*. These six articles titled "Illustrations of the Logic

of Science,” expanded logic, especially logic of science from the classical logic of rationalist deduction from self-evident truths; and empirical induction from experiential phenomena to include hypothetic inference what he early on called hypotheses, later retrodution, then abduction. The first of these papers, “The Fixation of Belief,” suggested that there are four ways in which our opinions, knowledge, and beliefs are established, tenacity, authority, a priori, and science. Tenacity represents the rejection of contrary data that does not fit the belief of the individual. Authority bases belief on an external source, sacred or secular. A Priori beliefs are held because they are reasonable and workable. Science (abduction) provides for tentative beliefs, knowledge continuously reconstructed based on new or increased experience. For Peirce, logic is the art of reasoning and reasoning depends on our ability to draw inferences “[which] is not so much a natural gift as a long and difficult art [and] the object of reasoning is to find out, from the consideration of what we already know, something else which we do not know” (1992, p. 111). In the second of his logic of science papers, “How to Make Our Ideas Clear,” Peirce suggested ways that pragmatism supplies a logic of science that can provide a process by which the irritation of doubt or unfamiliarity can provide belief or knowledge. The pragmatic rule: “Consider what effects, which might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object” (1992, p. 132). This maxim provides a baseline from which investigation begins. He wrote that even though “[d]ifferent minds may set out with the most antagonistic views, but the progress of investigation carries them by a force outside of themselves to one and the same conclusion” (p. 138) Peirce saw all reasoning as either deduction, induction, or retrodution, a term he used early on as hypothesis, or abduction. Early in his philosophy and logic studies he had little appreciation for hypothesis except as a corollary to induction, both serving as inference from the specific to the general. Hypothesis represented a starting point for reasoning which either assumed its correctness or outlined the process for the accumulation of more information with which to either accept or reject the hypotheticalal content, the scientific method-

By the time of the publication of the *Popular Science Monthly* articles, Peirce (1992) identified science as the most reasonable way to fix belief. He wrote, “with the scientific method ... I may start with known and observed facts to proceed to the unknown.... [B]ad reasoning as well as good reasoning is possible; and this fact is the foundation of the practical side of logic” (p. 121). Perhaps it was his training in mathematics, science, and philosophy that his father oversaw, or perhaps it was the Darwinist timber of the times.

To understand the Perceian triad of the scientific or pragmatic process as described in "The Fixation of Belief (1992), it seems to me that retrodution in Peirce's early thought is the basic inference. It proposes an answer based on an existence or occurrence and determines with little evidence what the cause or source must have been then relies on either tenacity or authority to fix that belief. Later he added hypothesis which proposes answers on what appears to be reasonable, relying on a priori explanations to fix its belief. Finally, abduction applies the scientific method to fix its belief concerning the existence or occurrence by obtaining more information through study or experimentation (p. 211). The results of the scientific/pragmatic process have symbolic meaning in Peirce's Semeiotic, his theory of signs. The sign serves in relation to the experiment or study of which it is the result. Ultimately, Peirce came to judge pragmatism as logic of abduction, the abductive-deductive-inductive method. Abductive inference is related to perceptual judgements that account for experiences and ideas that allow one to come to some belief as a result of the abductive investigation until, writes Peirce, "he should discover that the real state of facts was quite contrary to his belief" (1998, p. 456). Pierce continually sought ways to interweave his ideas about fallibalism, semiotics, tychism, synechism, agapism, and evolutionary cosmology into a grand system. Throughout his writing he sought to expand on the interrelatedness of his logic to science, mathematics, social sciences, and the method of science to philosophy.

William James

If Charles Peirce's father influenced him towards the study of mathematics, science, and philosophy, William James's father, Henry James senior (1811-1882), a theologian interested in the social, utopian, and mystical religion, instilled in his oldest son an interest in the impact of religious convictions in life which William revisited often in his lectures and writing (Boutroux, The most comprehensive of these was his book, *The Varieties of Religious Experience* (1902), which explored the relationships between philosophy, the sciences, and religious attitudes. In 1896 *The Will to Believe*, James first book of focused philosophical and religious thought, was dedicated to his "old friend, Charles Sanders Peirce," expressing his appreciation for the influence of his writing and thought. In his review, Peirce, ever the logician, while agreeing with James's views on metaphysical monism still took him to task mainly for his imprecise use of language and for the inconsistencies that appear between religious beliefs and the "limitation of its applicability" (Peirce, 1897, p. 35). James, with good grace,

accepted the 'contemptuous language' as befitting a logician. William James and Charles Peirce were friends during their adult lives. Peirce wrote,

No man could be closer to the antipode of their model than America's and the world's highest respected and closest beloved philosophic soul, William James. Nobody has a better right to testify to the morality of his attitude toward his own thoughts than I, who knew and loved him for forty-nine or fifty years. (Peirce, 1958, 6.182).

James and Peirce became friends while studying chemistry at the Lawrence Scientific School at Harvard. It took James some time to discover what he wanted to do in life. Until 1861 he wanted to become an artist, studying in the U. S. with William Morris Hunt and in Europe with John La Farge. In 1861, James enrolled in the Lawrence school to study chemistry with Charles W. Eliot and two years later anatomy with Jeffries Wyman. In 1864 James began medical school, but the next Spring signed on as a volunteer with the Thayer expedition organized by Louis Agassiz, accompanying him to Brazil. When the expedition returned on August 6, 1866, it had accumulated over eighty thousand items of natural history to be studied. At first James found his expedition leader tiresome, writing to his father, "I have profited a great deal by hearing Agassiz talk, not so much by what he says, for never did a man utter a greater amount of humbug" (Lurie, 1960, p. 347), but later came to appreciate Agassiz's qualities, "[B]ut by learning the way of feeling of such a vast practical engine as he is, ... I delight to be with him. I only saw his defects at first, but now his wonderful qualities throw them quite in the back-ground ... I never saw a man work so hard" (p. 347). "Agassiz so taught me the difference between all possible abstractionists and all lovers in the light of the world's concrete fullness (sic), that I have never been able to forget it" (James, 1911, p. 14). Agassiz's influence on James might be recognized in his *Principles of Psychology*, especially the chapters "Discrimination and Comparison" and "Reasoning" (James, 1890) James returned to his medical studies after his Brazil expedition. He studied physiology in Berlin in the fall and winter of 1867 then returned to Cambridge, finishing his medical degree in 1869. James, with his knowledge of medicine and physiology, was appointed to the Harvard faculty as instructor in anatomy and physiology 1873. He added psychology to his classes in 1875 and directed the first psychology laboratory in America (Boutroux, 1912). By 1879, James had changed his focus again, this time to philosophy. By 1885 he was assistant professor of philosophy and in 1889 was also named chairman of the psychology department. After 1897, James became full professor in philosophy (Boutroux, 1912).

James's first publications were in psychology. His two volume *Principles of Psychology* was published in 1890 followed by an abridged Text-book of Psychology. His responses to reviewers and critics were published in *Philosophical Review* (1892), *Mind* (1891), etc. Many of these reviews questioned the place of psychology in the scientific community. One of James's responses considered,

[psychology is] a mass of phenomenal description, gossip, and myth, including, however, real material enough to justify one in the hope that with judgment and good-will on the part of those interested, its study may be so organized even now as to become worthy of the name of natural science at no very distant day (James, 1892, p. 146).

James saw the value of psychology as a social science as well as an emerging natural science. Hewrote, "The kind of psychology which could cure a case of melancholy, or charm a chronicinsane delusion away, ought certainly to be preferred to the most seraphic insight into the natureof the soul" (146).

In *The Will to Believe* (1897), James presented his 'philosophic attitude' towards belief and truth. His preface defined his philosophic attitude as 'radical empiricism' which meant, for him, that knowledge consisted in workable hypotheses and that radical treated the world as pluralistic as opposed to the monism with which experience must agree. He insisted on the interrelatedness of personal experiences making knowledge a social commodity. James did not consider other current empiricisms like positivism, agnosticism, or scientific naturalism to offer adequate resistance to monistic philosophies. James explained, "After all that reason can do has been done, there still remains the opacity of the finite facts as merely given, with most of their peculiarities mutually unmediated and unexplained. [Knowledge and belief are] "a *Grenzbegriff*. Ever not quite" (p. 3) James strove in all his philosophical writing to separate his radical empiricism from pragmatism, pragmaticism, and humanism. In his preface to *Pragmatism*, James regretted the designation of pragmatism on the philosophy of the primacy of experience and the necessity of scientific reasoning and denied a logical connection of pragmatism and his radical empiricism (1907). For James the source of ideas is direct knowledge, and the source of knowledge is the associated experience. Radical empiricism then, with its pragmatic method and its principle of pure experience holds that "Everything real must be experienceable somewhere, and every kind of thing experienced must somewhere be real" (James, 1909, p. 372). The pragmatist relates perceived truth to the fact of experience and pure experience admits as fact in reality that which can be experienced by an experient (p. 372). "Reality is," for James, "an experience continuum" (1920, p. 152).

This excursion into James's thought has focused on his "radical empiricism" but he was interested in so much more. Fundamental to his interest was also the study of humanity and its interactions experientially and scientifically with the natural world. He was equally observant of the psychological, physiological, social, religious, and philosophical aspects of existence which impacted human life. In reading his works one encounters the regular intermingling of these various topics for his world-view encompassed the range of human thought and behavior. In terms of his radical empiricism, he engaged both the historical empiricists and positivists on the one hand and the theists and absolutists on the other. James witnessed the growth of pragmatic ideas, not only Peirce's original conceptions, but his own and also the instrumental view of the Chicago School led by Dewey and the humanist formulation of the Oxford school led by Schiller.

The Role of Philosophy and the place of Pragmaticism and Radical Empiricism

Karl Otto Apel (1922-2017) in his book *Der Denkweg von Charles S. Peirce*, [*Charles S. Peirce: From Pragmatism to Pragmaticism*], wrote,

"that in the world of so called industrial society there are exactly three philosophies that really function. By this I do not mean just that they are advocated, but that they in fact mediate between theory and practice in life. These philosophies are Marxism, Existentialism, and Pragmatism" (Apel, p. 1).

Those now must be updated. Marxism must be replaced by the rule of Authoritarianism in current and former Communist nations. Not that Authoritarianism is a philosophy in any meaningful sense, but, like philosophical Marxism and political Fascism, it allows for the control of the society through its ideological domination in whatever form the ideology takes in the process of defining and dominating the infrastructure, reorganizing institutions to reflect the dominant ideology, and using national and social policies that support the ideology and thwart opposing views. *Realpolitik* has been replaced by *Eigenutzpolitik*, the self-interest of the head of state. Marxist social thought survives as the source of various Critical Social Theories focused on the impact of science and technology, hegemony and oppression, social media and popular culture, etc. Modern "interest in ethics, mind, and technology grows outside the academy through public philosophy, podcasts, and online forums" (Philopedia, 2026, p.xx) resembling Peirce's Normative Sciences of logic, ethics, and aesthetics. For Karl-Otto

Apel, one of the functions of philosophy is the "mediation of theory and praxis" (1981, p. 3). Pragmatism and Existentialism having origins in Phenomenology suggest that individual thought and behavior is informed at different times by one or the other or both (1981, p. 2). James (1907) recognized this dualism of the possibility of interest in existential, if unprovable, truth and the pragmatic and scientific process of advancing knowledge. Peirce's Critical Common-Sensism (1998) agreed up to a point but, as was his way, his analysis developed a comprehensive system of logical characters that defined issues in Common-Sensism. Peirce considered his and James's conception of Pragmatism to be close, differing in the consequences attributed to its application. Ultimately, Peirce renamed his pragmatic system Pragmaticism to distinguish it from the form that he considered opposed to sound logic. While Peirce does not exactly spell it out, the difference between Pragmaticism and Pragmatism is wrapped up in the difference between the necessity of psychological and philosophical foundations. While much of twenty-first century philosophy has a number of new visages, pragmatic philosophy remains an important foundation in practical life. Other of Peirce's work informed the development of Analytic Philosophy, Logical Positivism, Linguistics, Philosophy of Science, and Semiotics.

Peirce, James and Education

Concerns with education took various forms with the pragmatic thinkers considered here. Peirce was concerned about the philosophy and practice of colleges and universities. Peirce viewed the American system as too focused on teaching and not enough on the advancement of knowledge. He viewed the necessity of the need to explore further the present state of knowledge without assuming that the existing state was adequate, what he termed the "Will to Learn," that schools become "institutions of learning, not institutions of teaching" (1958, p. 5.583) William James also viewed the reconstruction of education to be an important undertaking. James (1899), however, had a different perspective. He viewed the inclusion of a psychology of education as an important aspect of the training of new teachers, and the continuing development of the teaching professionals. James noted the role of the state school systems, their various structures, their responsiveness to local needs, and their ability to innovate as a unique feature of the evolving educational system. He found merit in the manual arts training that was becoming a growing aspect of the common schools at the end of the nineteenth century not as a vocational track but as a different view of practical, perhaps avocational activity and the importance of applying theory to practice. For teacher training and improvement, James felt that "The desire of the schoolteachers for a

completer professional training, and their aspiration toward the 'professional' spirit in their work, have led them more and more to turn to us [psychologists] for light on fundamental principles (p. 5)." James was realistic about the influence 'the new psychology' could have, suggesting there was little new in the new psychology and that fundamental psychological conceptions were most important to teachers. He wrote,

Psychology, being the science of the mind's laws, is [not] something from which you can deduce definite programmes and schemes and methods of instruction for immediate schoolroom use. Psychology is a science, and teaching is an art; and sciences never generate arts directly out of themselves. An intermediary inventive mind must make the application, by using its originality (p. 7-8).

James noted that even the pedagogical art of Herbart, a psychologist, was informed by the science of psychology but was distinct, "congruent, but neither was subordinate" (1899, p. 8). Ultimately, for James, "the teacher's attitude toward the child, being concrete and ethical, is positively opposed to the psychological observer's, which is abstract and analytic" (p. 13).

As we consider the place of the thought of Peirce and James in contemporary circumstances, we must view the environment of schooling and learning. Domination of learning management systems like Universal Design for Learning in the 1990s and the plethora of technology-based systems have appeared since Covid-19 necessitated the evacuation of classrooms and dependence on distance learning. Teacher training and evaluation, dominated by uniform models, demand compliance with prescribed and fixed classroom taxonomy. Peirce's view of schools focused on teaching instead of learning must be kept in mind even with the technological revolution of the 2020s. We would do well to remember Agassiz's focus on the acquisition of knowledge through discovery and experience rather than controlled lessons increasingly conforming to predetermined standards. James sought to enhance the role of the teacher as nurturer, promoting the inquisitive nature of the student and the scientific process for obtaining knowledge. Peirce focused on his own taxonomy of knowledge, tenacious, authority, a priori, and science, the first three being insufficient. Pragmatism with its acceptance of fallibility and assumption that knowledge is continuously reconstructed should continue to be recognized the basis of education.

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